

1.2. Multi-Application Series (SMA & SMAT)

1.2.1. INTRODUCTION

The Sonitron Multi-Application (SMA) series of buzzers and transducers are specially developed to meet a wide range of requirements in sound pressure, dimensions and mounting methods. These series produce highly reliable audible signals, giving an extremely clear penetrating or soft sound output. Both, buzzers and transducers, are now available in five sizes, 13 mm, 17 mm, 21 mm, 24 mm and 30 mm. All SMA products are manufactured to meet various mounting styles such as through-hole or surface mounting technologies (SMD). Therefore they are equipped with either pin or SMD terminals.

Moreover, they all present the following advantages:

- The octagonal housing provides alignment with pick & place machines for SMD models, which are packed in trays and protected with a heat resistant label for automatic soldering.
- The miniature models SMA-13 and SMA-17 offer a high sound pressure level together with a clear audible tone.
- The LT-versions of the models SMA-13, SMA-17 and SMA-21 generate an increased sound output. The LC-versions of the same models operate at extremely low current consumption; ideal for battery operated applications.
- The LV versions of the models SMA-21 generate an extremely loud sound output at very low battery voltage starting at 2 Vdc up to 6 Vdc.
- Due to the same case style for buzzers and transducers with different pin pitches per model, the user is offered a great deal of flexibility and can switch over to a buzzer or transducer at any time.
- The piezo audio technology can be qualified as solid state, highly reliable, without EMI and is able to withstand temperatures from -40°C to $+85^{\circ}\text{C}$. The mean time between failure exceeds in reality several times the figure indicated in this catalogue. Lifetime depends on different factors and is described more in detail in the addendum.



actual size

1.2.2. SELECTION GUIDE

Selection of an acoustic signal can be complex. Therefore the list below indicates the most recommended applications for our products at a certain distance and frequency. Nevertheless, it is important to take into account that every application is different and that the perception of a sound is very subjective.

Average distance from the source in free air	Domestic electronics Portable equipment Desk equipment Cameras Telephone bells	Battery operated apparatus Production equipment Alarms Miniature apparatus	Industrial equipment Control equipment Instrumentation
4 to 5 m	SMAT-30 SMA-30 SMA-30L SMA-21LV	SMA-24 SMA-24L SMA-17LC SMA-21LV	SMAT-17 SMAT-21 SMAT-24 SMAT-30
3 to 4 m			SMA-17LT SMA-17LC SMA-21LT SMA-21LC SMA-30 SMA-30L
2 to 3 m	SMAT-13 SMAT-17 SMAT-21 SMA-13LC SMA-17LC SMA-21LV	SMAT-17 SMA-17LC SMA-21 SMA-21LC SMA-21LV	SMA-17 SMA-17LT SMA-21 SMA-21LT SMAT-17 SMAT-21
1 to 2 m			SMAT-17 SMAT-21 SMA-13 SMA-17
0 to 1 m			
<i>Frequency</i>	<i>2 kHz to 3 kHz</i>	<i>2,5 kHz to 3 kHz</i>	<i>3 kHz to 3,8 kHz</i>

1.2.3. SMA BUZZERS



The Sonitron Multi-Application buzzers are low cost commercial grade components for large volume applications. The SMA series are designed to meet a wide range of current consumption, voltage, sound pressure, mounting methods, connection, dimensions and packing requirements. They are available in five sizes: 13 mm, 17 mm, 21 mm, 24 mm and 30 mm.

The buzzers have a built-in oscillator generating their working frequency. They produce a highly reliable audible tone signal, giving either an extremely clear and penetrating tone or a soft sound for non-aggressive signals.

1.2.3.1. Advantages & applications

ADVANTAGES:

- octagonal form
- models with different pin pitches
- light but solid state construction
- little power consumption, especially the extra loud LC-versions
- important voltage range (1,5V to 24V)
- easy mountable
- SMA-13 and SMA-17 for applications with limited space
- SMT models with heat resistant label for protection during automatic soldering, packed in trays for automatic placing

APPLICATIONS:

- portable battery operating devices
- audible alarms
- gas detectors
- weighing and measuring equipment
- medical instrumentation
- timers
- control instrumentation and systems
- copiers
- automobiles
- games and toys
- computer peripherals
- cash registers

1.2.3.2. Specifications

Model	Sound pressure* dB(A)	Frequency (±15%) Hz	Operating voltage	Operating current	Weight
SMA-13	75 dB(A)	3 kHz	1.5 to 24 Vdc	1.8 mA	1 g
SMA-13LT	82 dB(A)	3 kHz	1.5 to 15 Vdc	11.6 mA	1 g
SMA-13LC	81 dB(A)	3 kHz	1.5 to 15 Vdc	0.7 mA	1 g
SMA-17	82 dB(A)	3 kHz	1.5 to 24 Vdc	3.3 mA	2 g
SMA-17LT	86 dB(A)	3 kHz	1.5 to 15 Vdc	15 mA	2 g
SMA-17LC	89 dB(A)	3.5 kHz	1.5 to 15 Vdc	0.8 mA	2 g
SMA-21	85 dB(A)	3.3 kHz	1.5 to 24 Vdc	3.8 mA	2.5 g
SMA-21LT	90 dB(A)	3.3 kHz	1.5 to 15 Vdc	12.5 mA	2.5 g
SMA-21LC	91 dB(A)	3.8 kHz	1.5 to 15 Vdc	1.1 mA	2.5 g
SMA-21LV	87 dB(A) at 3V	3 kHz	2 to 6 Vdc	13 mA	2.5 g
SMA-24	92 dB(A)	3 kHz	1.5 to 24 Vdc	4.2 mA	4 g
SMA-24L	98 dB(A)	3 kHz	1.5 to 15 Vdc	6.7 mA	4 g
SMAI-24	92 dB(A)	**3.5 kHz	5 to 24 Vdc	6.2 mA	4 g
SMA-30	87 dB(A)	2.5 kHz	1.5 to 24 Vdc	4.1 mA	5 g
SMA-30L	97 dB(A) at 9V	2.5 kHz	3 to 9 Vdc	5 mA at 9V	5 g

* All measurements are made in free air at 21°C at 30 cm at 12V. Buzzers soldered on a pcb board dimensions 24 cm x 11 cm.

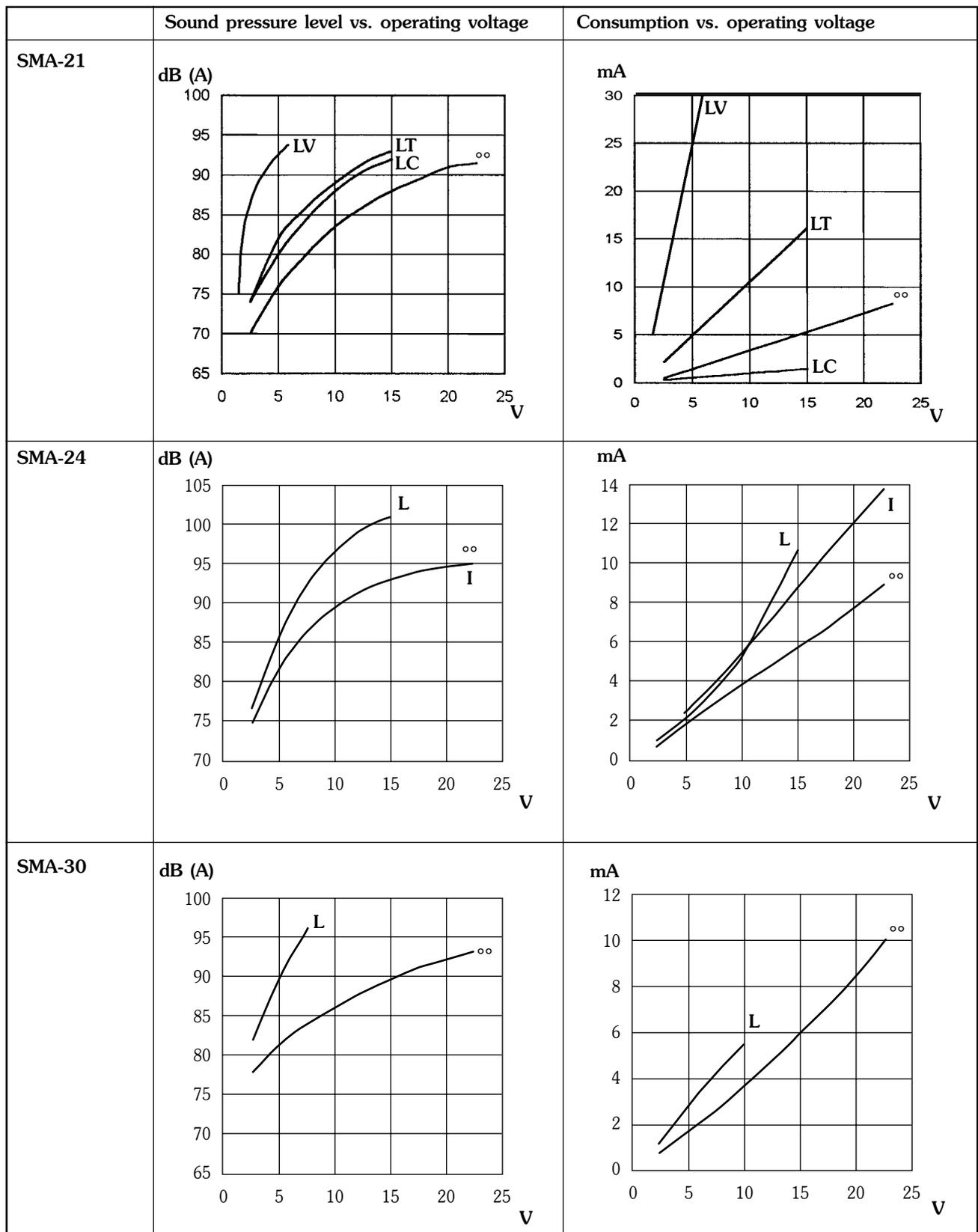
** SMAI 24: intermittent pulse rate of 5Hz (at 15 Vdc). All the other models have a continuous tone.

Operating temperature	-20°C to +70°C
Storage temperature	-40°C to +85°C
Life time (at 21°C)	See expected life time curve in addendum
Case material	ABS (UL rating: 94 HB) for pin-versions PPS (UL rating: 94 V0/5V) for SMD-versions
Standard colour of case	Grey

1.2.3.3. Electrical parameters

	Sound pressure level vs. operating voltage	Consumption vs. operating voltage
SMA-13		
SMA-17		

All measurements are made at 30 cm in free air at 21°C.
∞: standard versions, respectively SMA-13, SMA-17, SMA-21.



(*) All measurements are made at 30 cm in free air at 21°C.
 ∞∞: standard versions, respectively SMA-24, SMA-30

1.2.3.4. Dimensions (All dimensions are in mm)

	SMA-13	SMA-17	SMA-21
Pin-version			
SMD-version			
	<p>Recommended PCB lay-out</p>	<p>Recommended PCB lay-out</p>	<p>Recommended PCB lay-out</p>

* The SMA-21LV has a diameter of 3 mm. All the other SMA types have a diameter of 3.8 mm.

(All dimensions are in mm)

	SMA-24	SMA-30
Pin-version	<p>only for SMAI version</p>	
SMD-version	<p>Recommended PCB lay-out</p>	<p>Recommended PCB lay-out</p>

1.2.3.5. Product codification

SMA	I	-	13	L	C	P7.5
			17	LV	T	P10
			21			P15
	↓		24			P17.5
			30			P20.32
↓	Intermittent	↓	Square diameter (mm)	↓	↓	S
Sonitron				L: Loud	C: C-MOS	↓
Multi-				LV: Low voltage	T: Transistor	P: Pin distance (in mm)
Application						S: SMD terminals

1.2.3.6. List of available product types

Version	Standard (°)	Loud (L)	Transistor (LT)	Low Current (LC)	Intermittent (I) (*)	Low voltage (LV)
SMA-13 serie	SMA-13 P7.5 SMA-13 P10 SMA-13 S		SMA-13LT P7.5 SMA-13LT P10 SMA-13LT S	SMA-13LC P7.5 SMA-13LC P10 SMA-13LC S		
SMA-17 serie	SMA-17 P7.5 SMA-17 P10 SMA-17 S		SMA-17LT P7.5 SMA-17LT P10 SMA-17LT S	SMA-17LC P7.5 SMA-17LC P10 SMA-17LC S		
SMA-21 serie	SMA-21 P10 SMA-21 P15 SMA-21 P17.5 SMA-21 S		SMA-21LT P10 SMA-21LT P15 SMA-21LT P17.5 SMA-21LT S	SMA-21LC P10 SMA-21LC P15 SMA-21LC P17.5 SMA-21LC S		SMA-21LV P10 SMA-21LV P15 SMA-21LV S
SMA-24 serie	SMA-24 P10 SMA-24 P15 SMA-24 P17.5 SMA-24 P20.32 SMA-24 S	SMA-24L P10 SMA-24L P15 SMA-24L P17.5 SMA-24L P20.32 SMA-24L S			SMAI-24 P10 SMAI-24 P15 SMAI-24 P17.5 SMAI-24 P20.32 SMAI-24 S	
SMA-30 serie	SMA-30 P15 SMA-30 P17.5 SMA-30 P20.32 SMA-30 S	SMA-30L P15 SMA-30L P17.5 SMA-30L P20.32 SMA-30L S				

* When the third pin of the SMAI-24 is left open, the audible signal is intermittent. When the third pin is connected to the (-), the audible signal is continuous.